

the same transit at another meridian, is the arc of difference of longitude registered in time.

Very sincerely, your friend,
JOHN LOCKE.

Pending nominations, Nos. 224 and 225, were read.

Stated Meeting, January 19.

Present, twenty members.

Dr. PATTERSON, President, in the Chair.

Letters were received and read:—

From the Directors of the Holland Society of Sciences, at Haarlem, dated Haarlem, 2d August, 1848, transmitting a donation to the Society:—

From the Regents of the University of the State of New York, dated Albany, 11th January, 1849, acknowledging the receipt of Vol. V. No. 41, of the Proceedings of this Society: and,—

From the Baroness Berzelius, dated Stockholm, 15th September, 1848, announcing the death of her husband on the 7th August, 1848, at the age of 69.

The following donations were announced:—

FOR THE LIBRARY.

Natuurkundige Verhandelingen van de Hollandsche Maatschappij der Wetenschappen te Haarlem. Tweede Verzameling: 5te Deel, 1e Stuk. Haarlem, 1848. 4to.—*From the Holland Society of Sciences at Haarlem.*

The American Journal of Science and Arts. Conducted by Professors Silliman and Dana. Second Series. No. 19. January, 1849. New Haven. 8vo.—*From the Editors.*

The American Journal of Medical Sciences. Edited by Isaac Hays, M.D. No. XXXIII. New Series. January, 1849. Philadelphia. 8vo.—*From Dr. Hays.*

The African Repository and Colonial Journal. Vol. XXV. No. 1. January, 1849. Washington. 8vo.—*From the American Colonization Society.*

Professor Dunglison's Introductory Lecture, delivered in Jefferson Medical College of Philadelphia, October 19, 1848. 8vo.—*From Dr. Dunglison.*

Report on the Finances of the Commonwealth of Pennsylvania, for the Year ending November 30, 1848. Made to the Governor by the Auditor General. Harrisburg. 8vo.—*From Thomas C. Steel, Esq., H. R.*

Report of W. Milnor Roberts, Esq., Civil Engineer, on the Survey of a Route to avoid the Schuylkill Inclined Plane on the Philadelphia and Columbia Rail-road. Authorized by the act of April 11, 1848. Harrisburg, 1848. 8vo.—*From B. Matthias, Esq., Senate.*

Chemical and Pharmaceutic Manipulations: A Manual of the Mechanical and Chemico-mechanical Operations of the Laboratory: Containing a complete description of the most improved apparatus, with instructions as to their application and management, both in manufacturing processes, and in the more exact details of analysis and accurate research. For the use of Chemists, Druggists, Teachers, and Students. By Campbell Morfit. Philadelphia, 1849. 8vo.—*From the Author.*

On motion of Judge Kane, the Secretary was directed to address a letter of condolence to the Baroness Berzelius, on the death of her distinguished husband.

The Committee appointed at the last meeting of the Society, on the subject of the communication from the Superintendent of the U. S. Coast Survey, reported as follows:—

The Committee, to which was referred a letter from Prof. Bache, Superintendent of the U. S. Coast Survey, asking the consideration, by the Society, of the scientific character and results, of the practical results, and of the progress of the survey, and inviting any suggestions tending to improvement in the different departments of the work, respectfully submit the following report.

In coming to their conclusions, they have necessarily assumed the correctness of the statements as to the progress and results of the survey made by the Superintendent in his Annual Reports to Congress. The Committee are not aware that any doubt has ever been expressed as to their correctness; and had they been questioned, it would have been impossible for the Committee to verify them. The question for their examination appeared to them, therefore, to be, not

whether these results have been attained, but whether, in a practical point of view, they justify the yearly expenditure authorized by Congress, and whether their scientific character is such as the means at the disposal of the Superintendent justify us in expecting, and such as is likely to meet the approbation of scientific men in our own and in other countries.

It cannot be a matter of surprise that the American Philosophical Society should undertake these inquiries, since, originally consulted by the government as to the propriety of instituting such a survey, and the manner in which it should be conducted, they have ever since, on all proper occasions, testified their interest in its efficient prosecution.

The object of such surveys as that which is now in progress along our sea-coast, is to determine with accuracy the position of every conspicuous fixed point within the limits of the survey. By which determination, and by the aid of the conventional marks for different objects, used in topographical drawing, an accurate representation may be made of the country surveyed, so that the relative position of any objects, their distance apart, the character of the country between them, and their elevation above the level of the sea, as well as the position and figure of shoals, the depth of water upon them, and the nature of the bottom, the direction and force of the currents, whether oceanic or tidal, the time of high and low tide, with its rise and fall in our principal ports, may be easily and precisely known.

There is scarcely a branch of physical science (chemistry alone excepted) to which such a survey is not in the highest degree useful; but its practical results are those of the most prominent importance. It permits the sailor, who comes for the first time upon our coast, to recognise with accuracy his position, and direct with precision his vessel to its port. It warns him of the dangerous shoals which lie in his path, and indicates to him the existence and strength of currents which may retard or assist his progress. And if he be surprised by a tempest, which jeopard's his safety, it guides him to a harbour of refuge, where he may await more favourable weather. It enables the government to select with certainty the best situations, both for works intended for the defence of the coast against hostile invasions, and for light-houses and buoys which are to serve as guides to our commerce; and, when extended inland, it indicates the best routes for internal communication, the obstacles to be overcome in its establishment, and the resources which the country presents for its maintenance. It may be truly said, that a government owes such

surveys as this to its citizens; and since they inure in the highest degree to the benefit of all; and since the means of accomplishing them are possessed by the government only, it is one of its most important duties to have such surveys executed in the most complete manner possible.

In our system of finance, the greater part of the revenue of the government is derived from the duties paid by our commerce; and the demand that a small portion of the immense wealth, which is thus annually poured into the treasury, should, for a few years, be expended in protecting the lives and property of those contributing, is so plainly just as to need no argument in its support. The actual receipts from customs, in the Treasury, for the fiscal year, ending on June 30, 1848, was \$31,757,070.95, and the estimated receipts for the next year, 32,000,000. The appropriation asked by the Superintendent for the Coast Survey, for the same year, is \$186,000; $\frac{1}{172}$ of the receipts, or 58 cents in the one hundred dollars. Nor is the policy, in a financial point of view, less evident. The Committee has found it impossible to get any definite information as to the average amount of dutiable goods yearly wrecked upon our coast; but the actual duties paid, in 1848, by five packet ships, in the port of Philadelphia, was \$243,942.15, or an average of \$48,788 each. A loss of duties, equivalent to those paid by four such ships, upon our coast, would amount to more than the estimates for the expenses of the survey for 1849. The value of one such ship and cargo would probably have defrayed all the expenses of the work for the two years, 1847 and 1848. The loss of time by ships compelled, for want of accurate charts, to await, far from the shore, the arrival of pilots, in place of running close into land, where they may be at all times found, and the higher rates of insurance against dangers, of which just enough is known to render them formidable, but not enough to permit them to be avoided, must also be added in the calculations of the pecuniary advantages of such a survey; while the continually recurring loss of life by shipwreck, and the immense amount of human suffering caused by the detention of crowded passenger-ships off our coast, especially in the winter season, form an item of which no estimate can be made in such a calculation.

If, then, our coast be peculiarly liable to such dangers as these, if it be dangerous in its character, and comparatively unknown, the duty of the government to make and publish such charts as shall give every possible facility and safety to our commerce cannot be denied. That this is the character of our coast is almost too well known to

need assertion ; but if proof be required, we have but to turn to the reports of the survey of the last few years to satisfy the most incredulous. Within that time, channels of vast importance to commerce, and before altogether unknown or unused, have been discovered in the harbour of New York and in the Delaware bay ; and six unknown and dangerous shoals have been discovered within the last year, lying in the direct track of the commerce between New York and Europe, as well as of the coasting trade between the former place and New England. Of the Delaware bay, until the recent publication of the maps of the Coast Survey, there was no chart upon which reliance could be placed. Some of the most dangerous shoals were placed from three to seven miles in error ; the light-house at Bombay Hook, a neighbourhood at one time noted for the number of vessels grounding there, was five miles out of place, and the mouth of the bay, between Capes May and Henlopen, was represented from 15 to 18 miles, when the survey shows it to be but eleven and a half. Yet, over this unknown and dangerous ground passed yearly, according to a report made to the government, about the year 1837, by Major Bache, of the Topographical Engineers, an insurable interest created by the coal trade alone, amounting to \$22,000,000 per annum, estimating merely the vessels in ballast coming after it, and the value of the vessel and cargo carrying it to the various ports at which it is wanted. Many of these vessels, however, instead of ballast, bring to Philadelphia cargoes of plaster, fish, lumber, salt, &c., the value of which is, of course, not included in the above estimates ; and it is well known that few of these vessels employ a pilot. To such an extent has this coal trade now increased, that while, in 1836, there cleared from Philadelphia 3225 vessels, carrying 344,812 tons, the number of clearances in 1846 was 8953, carrying 1,065,228 tons. Along the southern part of our country, the coast is, of course, still less accurately known, since it does not lie in the track of the extensive trade passing over the points which we have alluded to above. These few facts will be sufficient to show the pressing necessity which exists, that a coast so little known, and of so dangerous a character, from its exposure, and the number of its shoals, should be, as soon as possible, accurately and thoroughly explored.

In order to accomplish a work of such extent with the requisite precision, it is necessary to make available to its purposes all the refinements which mathematical and physical science have added to the art of measurement. The original base lines, which form the starting points of the survey, require to be measured by apparatus of

the most delicate nature, since any error, committed in this early part of the work, will necessarily be multiplied throughout the series of triangulations which rest upon it. The bases of verification require to be measured with the same degree of accuracy, as otherwise they could not serve as a check upon the calculated results. Nor is less precision necessary in the measurement of the angles of the primary and secondary triangulations, which serve as checks upon each other, since the position of any point in the former is determined by each of these series. And, again, at every important point the astronomical observations for latitude and longitude again control the results of the geodetic operations. In this way, although absolute accuracy can never be expected from human work, and especially from that which requires so many observations and calculations for its elaboration; yet the possible error is reduced to so small a quantity, that it may be, for all purposes of commerce and internal improvement, neglected. But to obtain these results the whole resources of science are requisite; and it is necessary that he to whom such a survey is entrusted, should have a thorough familiarity with what has heretofore been done in this regard by other nations, and should possess, besides, that degree of talent and profound science which will enable him to judge of the results of the eminent men who have preceded him, to select what is worthy of imitation in their processes, and improve upon that which is defective.

When, however, a survey of this kind is conducted with the requisite degree of precision, its results become incalculably useful, not only in a pecuniary point of view, to the government and citizens, but to the advancement of science, and, through it, of civilization and the general welfare of mankind; and there are, in many branches of science, problems not yet definitely solved, to the correct elucidation of which the observations of the Coast Survey will become available. Hence the cause of science, not less than that of self-interest and humanity, is involved in the proper conduct of such a survey; and, by its promotion, while we improve our commerce and relieve our seamen from a portion of the dangers to which they are exposed, we shall raise our national character, and justify our position among the great nations of the earth.

If, now, we attempt to compare our Coast Survey with similar works executed abroad, we shall find just cause of pride in the manner in which it has been conducted.

The regulation introduced by the present Superintendent, by which the field-work, at first computed by the party making it, is after-

wards subjected to a second calculation by others not connected with them, is such as to prevent the introduction of accidental errors, and to remove altogether the possibility of tampering with the observations. It therefore allows implicit confidence to be placed in the work.

The measurement of the more recently selected bases has been made by a new apparatus, contrived by the Superintendent for the purpose, (the description of which will be found in his Report for 1847, and in the Proceedings of this Society, Vol. IV. p. 368,) in which the arrangements for the support of the bars, compensation for temperature, accuracy of contact and delicacy of alignment, are such as, in the opinion of the Committee, leave nothing to be desired; while the apparatus is so simple, and so easily manipulated, as to allow of a rapidity of work which, it is believed, has never before been obtained. The measurements, by this instrument, are, of course, verified by the most severe and improved methods, and the agreement of the various measurements, some of which were made under circumstances peculiarly unfavourable, shows a degree of accuracy which has certainly never been surpassed. The application of the electric telegraph to the determination of differences of longitude, and the invention of a clock by which the time is accurately registered without the intervention of any assistant, at stations at any distance apart allows the correct difference of time between two places to be determined within a very small fraction of a second, and will give the means of getting the differences of longitude between our principal cities with a degree of accuracy which has only been obtained at the principal observatories of Europe, after many years of continued observation and comparisons.

Improvements upon the astronomical apparatus used, and careful experimental observations upon the relative efficiency of different forms of instruments, and different modes of observing, have led to great accuracy in the observations for the determination of latitudes, so that the places of the smaller stars, as given in the catalogues, are not now sufficiently precise for the work, and the positions of the stars used have to be determined by direct observations.

The arrangements for having the maps, after reduction, engraved in the office of the survey, under the immediate inspection of an assistant, and then, after two separate verifications, submitted to the Superintendent, before publication, are calculated to maintain the accuracy of the field-work upon the map issued, as far as that is possible.

The charts issued from the office bear the marks of the great

care which has been bestowed upon them; and, as specimens of topographic art, are not exceeded by any which the Committee have seen.

The same attention to insure accuracy is equally visible through the whole plan of organization and the details of the work; and the Committee can but repeat that, in their opinion, our Coast Survey will, in this respect, bear comparison with the best geodetic measurements of Europe. As to the efficiency and rapidity of progress of the work, it is not possible to make a minute comparison, since, in no other work of the kind, is there any annual report from which its progress may be judged of, nor, indeed, was there in the Coast Survey, until this feature was introduced by the present Superintendent. Nor can any statement of the number of square miles, accomplished in any year, give a fair standard of comparison between two surveys in different countries. The nature of the ground, the climate, and many other causes, operate so strongly to retard or to facilitate a work of this kind, that any parallel founded on them cannot but be fallacious. The Ordnance Survey of Great Britain was commenced in 1791, has been continued from that time, and is, we believe, not yet finished. Our own Coast Survey was actually commenced by the late Mr. Hassler, in 1817, discontinued from that time until 1832, when it was recommenced, and has been prosecuted continuously to the present time. The triangulation now extends, in a connected series, from Maine to Virginia, and has been commenced in North and South Carolina, Alabama, Mississippi, Louisiana and Texas. Since the work has been in charge of the present Superintendent, (that is, since 1844,) an area of 17,555 square miles has been triangulated; the topographical surveys, with the plane-table, have covered 2138 square miles, and embraced an extent of shore-line, roads, &c., of 7179 miles. The hydrography has covered an area of 20,086 square miles, of which 16,824 were principally off-shore, or deep-sea work. Twenty-two sheets of maps and charts have been published.

The plan adopted by the present Superintendent, by which the survey has been simultaneously started at different points of the coast, presents striking advantages in more than one point of view. It extends the benefits of the survey more speedily to all parts of the country, reduces the time necessary for the completion of the work, and, as the Superintendent has shown in his reports, diminishes the total expenditure necessary for it. The minute division of labour, and the specific instructions from the Superintendent to the various

parties, as to their duties, are well calculated to promote activity and increase the efficiency of the work, an end which will also be greatly assisted by the honourable and friendly rivalry which evidently exists between the civilians and the officers of the army and navy engaged on the work.

In fact, so much and such excellent work could not have been accomplished within so short a period, except by extraordinary energy on the part of the Superintendent, seconded by the cordial and zealous co-operation of all those under his charge; and the Annual Reports of the Survey indicate an amount of scientific talent and knowledge, as well as of energy and enterprise among the numerous assistants, which is highly honourable to our country.

The expense of conducting such a survey as this, must necessarily be great, though by no means so in reference to the advantages obtained from it. From the year 1844 to 1848, (the period during which it has been in the charge of the present Superintendent,) the appropriations to the Survey have amounted, in the aggregate, to \$622,000; and, if we add to this the estimate for 1849, we shall have a gross amount of \$808,000, as the cost of the Survey for six years. It is true, that the expenditure has been every year increasing, but it is equally so, that such increase has expedited the operations of the Survey in a still higher ratio, and has thus actually diminished its final cost. Thus, while in 1844, the cost of fifteen parties, (with less field-work in all the departments,) was \$100,000, in 1848, thirty effective parties had been kept in action for \$130,000; that is, an additional expense of 30 per cent., has doubled the efficiency of the Survey. In fact, so economical has been its management, that notwithstanding the far more elaborate work, and the much greater precision, the expense of the Survey is shown scarcely to exceed that of the Surveys of the public lands executed for the government. For the reasons before stated, and for others which will easily suggest themselves, it can scarcely be deemed fair to attempt a comparison of the cost of the Coast Survey with that of the Topographical Map of Great Britain; yet such a comparison may, perhaps, serve to defend our work from a charge of extravagance. The cost of the Ordnance Survey of Great Britain, from 1812 to 1848, is stated, by a writer in the London, Edinburg and Dublin Philosophical Magazine for April, 1848, at £1,500,000, or about \$7,500,000. A survey of the city of Dublin, for municipal purposes, was stated in Parliament to have cost £200,000, or \$1,000,000; and it was, at the same time, stated that the surveys of the City of London, under the parochial assess-

ments' act, had already cost £300,000, or \$1,500,000; yet a new survey of this latter city is now in progress. With these data before us, and an attentive study of the estimates of the Superintendent, it is scarcely possible to doubt that the Coast Survey has been carried on with all possible economy, consistent with its efficient prosecution.

If it be asked, what results of a scientific or practical character have accrued, or are likely to accrue, from this vast work, a hasty glance at its progress will furnish an adequate answer.

Accurate charts have already been published of the Bay of New York, and of the Delaware Bay, and approaches of the City of Philadelphia, and of six other harbours; and, of the former, one map upon a large scale, occupying six sheets, and another in one sheet, have been issued. Of some of these harbours, no maps of a trustworthy character were before in existence, and in all of them important corrections have been made, new channels indicated, unknown shoals pointed out, and the increase or decrease of the old ones marked: the soundings and nature of the bottom carefully noted, and every information given which can be of service to vessels desirous of entering.

The plan adopted by the present Superintendent, of publishing the results of the Survey as fast as the maps can be prepared, cannot be too highly approved. There can be no reason why, after the work, on a certain part of the coast, has been finished and verified, those who are to benefit by its results should be kept waiting until the whole of so vast a work as this can be completed: why the main trade of our principal cities with Europe should continue subject to the annual risk arising from insufficient maps, until the whole of the shores of the Gulf of Mexico have been surveyed.

The value of the publication of these maps has been materially enhanced, too, by the liberal policy of the government, in allowing them to be sold at such a low price as to put them within the reach of all who may require them. By this judicious course, their introduction in place of the insufficient and often treacherous guides which they are to replace will be much more rapid, and they themselves, being more widely disseminated, will be far more useful.

Another practical benefit, of incalculable importance, which we already owe to the efficient prosecution of the Coast Survey, is the discovery of dangerous and sunken rocks and shoals, before unknown, yet lying directly in the path of our principal trade. In addition to the discovery of a new channel into New York Bay, having two feet more water than the old channels; of two new and impor-

tant channels into Delaware Bay, one of which is open when the old channels are choked with ice, and is thus invaluable, in the winter season, to our coasting trade; and of another on the coast of the State of Mississippi, the Coast Survey has already detected and published nine dangerous shoals in the vicinity of Nantucket, and numerous rocks in Long Island Sound and its vicinity. If these were the only practical benefits to be derived from it, they would more than repay all its expenditure. Obstructions of a similar character have been discovered in the Delaware and Chesapeake Bays, and doubtless many more will reward its labours upon the coast further southward.

The information derived from the Coast Survey has also been made useful in the determination of the proper sites for light-houses along our coast, and in assisting the local surveys which the authorities of the various seaboard towns desire to have made. And when, in the progress of civilization, the citizens of our different States shall feel the importance of following the excellent example set them by Massachusetts, and substituting true topographical maps of their territories for the fancy sketches which now bear that name, the results of the Coast Survey will be found of great utility to them in establishing their bases and verifying their work.

But, after all, the great practical utility of the work will be found in the publication of cheap and trustworthy maps, which, while they furnish valuable information to all, will be instrumental in diminishing that fearful loss of lives and property which annually takes place along our extensive and exposed coast.

When we turn to inquire what benefits to science have arisen, or are likely to arise, from the Coast Survey, under its present organization, their number and importance almost preclude an elaborate reply.

The first and most prominent point of scientific interest upon which its results will be brought to bear, will, of course, be the determination of the length of a degree of latitude, between different parallels, and from this, of the figure of the earth. A problem considered of such importance that surveys, more costly than that of our coast is likely to be, have more than once been undertaken by European nations, for the sole purpose of obtaining its solution. And France, with that honourable zeal which has placed her first in all matters of physical science, has sent parties of her ablest men to the most remote regions of the earth, to execute these measurements. As our Survey, when completed, will extend over about 20° of latitude, the opportunity of

controlling the results of former explorations will be most excellent, and most advantageous to science.

The vast number of astronomical observations of different kinds for the determination of latitudes and longitudes, extending from Galveston to the northernmost point of the coast of Maine, the experimental observations for the determination of the relative value of different instruments, and different methods of observing for the nice determination of celestial phenomena, and the elaborate discussions of the formulæ for reduction and correction of errors, by the able astronomers whom the Superintendent has engaged in these labours, must be of inappreciable importance to practical astronomy, for which we, as a nation, are already obtaining a high character.

The application of the electric telegraph to the determination of longitudes, and the invention of the self-registering clock, are improvements, the vast importance of which cannot be overlooked.

The development of the laws which govern the distribution of sediment at the bottom of the sea and along the coast, the microscopic examination of the various infusoria which live in them, and the establishment of safe data, from which any future elevation or depression of the land, however gradual in its progress, may be detected, will be found as important to the geologist as the results which we have just alluded to are to the astronomer; while the extensive and delicate magnetical observations, the study of the tidal and oceanic currents, and especially of that grand phenomenon, the Gulf Stream, cannot fail to furnish a vast body of the most carefully determined facts, capable of giving to the physical science of our country an impetus which it has never yet received: while the training of our officers of the army and navy to scientific observations, and, what is far more important, the education of a body of young men in the strictest school of modern experimental science, may be ranked among the most important advantages either in a practical or scientific point of view.

It is not to be expected that, confined to the examination of the results of the work as published, and without access to the official records, the Committee could make any suggestions likely to lead to any practical improvement in the conduct of the work. It is evident, from the results, that the superintendence of Prof. Bache is very active in this respect, and the members of the Society have been long enough associated with him to know that nothing in the way of improvement is likely to escape his notice or to meet his neglect. Your Committee, however, would respectfully call his attention to the fact,

that, if consistent with his duties and means, the early publication of the original observations, astronomical, magnetic, hydrographical and others, would be of vast service to the practical science of the country, and is anxiously hoped for by its cultivators.

In performance of their duty, the Committee have been compelled to confine themselves to an indication merely, of the most important conclusions to which their examinations have led them. To enlarge upon the points suggested can scarcely be necessary in a report to a scientific society, and would have occupied more time than their other pursuits would allow, or the Society would have at its disposal. But enough, they think, has been said to warrant them in relying upon the approbation of the Society in their conclusions:

1. That the Survey of the Coast is a work which, from its importance to our citizens, recommends itself in the strongest manner to the protection of the government.

2. That the benefits, both of a scientific and practical character, which have already been derived, and are constantly resulting from it, are such as to repay abundantly the labour and expense which have been, and may hereafter be devoted to it.

3. That it has heretofore been conducted accurately, efficiently, and economically, and that there is every reason to believe that it will best thrive by being left with its present organization.

4. And that, as well from the magnitude of the undertaking, as from the skill and energy with which it has been conducted, it will prove honourable to those who first conceived it, and to those who have been engaged in its prosecution.

The Committee, therefore, recommend to the Society the adoption of the following Resolution:

Resolved, That the American Philosophical Society recommend to the Superintendent of the United States Coast Survey, the publication, as speedily as shall be consistent with the interests of the Survey, of the observations upon which the published results are founded, and of all others made during its progress; as well as of the formulæ for computation and reduction, and the discussions of the elimination of errors from the observed results.

And the Committee respectfully ask to be discharged.

R. M. PATTERSON,
JOHN F. FRAZER,
E. OTIS KENDALL,
J. K. KANE.

The resolution was adopted by the Society, and the Committee was discharged.

Mr. Trego announced the death of Robert Gilmor, of Baltimore (a member of this Society), on the 30th November, 1848, in the 75th year of his age.

On motion of Mr. Fraley, Charles B. Trego, Esq., was re-appointed Librarian for the year.

The following named gentlemen were appointed on the Standing Committees of the Society:—

Committee of Finance.—Dr. R. M. Patterson, *Chairman*, Isaac Lea, Tobias Wagner.

Committee on the Hall.—Hon. J. K. Kane, *Chairman*, Frederick Fraley, Franklin Peale.

Committee on the Library.—Dr. Isaac Hays, *Chairman*, George Campbell, George Ord.

Committee of Publication.—Isaac Lea, *Chairman*, Dr. Isaac Hays, J. Francis Fisher.

The catalogue of surviving members of the Society was read, from which it appeared that the number on the list on the 1st January, 1849, was 363; of whom are resident in the United States, 252; and in foreign countries, 111.

The Society then proceeded to ballot for members.

New nominations, Nos. 226, 227, and 228, were read.

On motion of Judge Kane, a Committee, consisting of Judge Kane, Dr. Hays, and Mr. Richards, were appointed to take measures for procuring a portrait of the late President, Dr. Chapman, to be placed in the Hall of the Society.

The Reporter laid on the table Vol. V. No. 41, of the Proceedings of the Society.

All the other business of the Society having been disposed of, the ballot boxes were opened, and the state of the polls declared by the presiding officer.

The following named gentlemen were found to have been duly elected members of this Society:—

Prof. E. N. HORSFORD, of Harvard University.

HON. GEORGE P. MARSH, of Vermont.